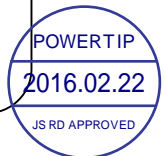# SPECIFICATIONS

CUSTOMER :

SAMPLE CODE : SH480272T-006-I-Q

MASS PRODUCTION CODE : PH480272T-006-I-Q

SAMPLE VERSION : 03

SPECIFICATIONS EDITION : 008

DRAWING NO. (Ver.) : JLMD-PH480272T-006-I-Q_004

PACKAGING NO. (Ver.) : JPKG-PH480272T-006-I-Q_001

Customer Approved

Date:

POWERTIP
2016.02.22
JS RD APPROVED

Approved	Checked	Designer
閆偉	張久慧	劉進

□ Preliminary specification for design input

■ Specification for sample approval

POWERTIP TECH. CORP.

NO.PT-A-005-8

History of Version

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
03/22/2010	01	001	New Drawing.	-	劉進
05/06/2010	01	002	New Sample.	-	劉進
12/10/2012	01	003	Modify the components area's height	Appendix	劉進
01/24/2013	02	004	Modify VR height & size	-	趙冬冬
09/05/2013	03	005	Update Average Brightness Of Backlight Change Touch Panel Supplier Remove 3-wire Serial Interface Add Data Format & Power On/Off Sequence	9 10,11 13~15 16,17	劉進
04/09/2014	03	006	Modify Viewing Angle & Contrast Ratio Show FPC Suggested Connector	6 Appendix	劉進
08/18/2015	03	007	Show Backlight Life Time	9	劉進
02/22/2016	03	008	Change Backlight Characteristics	6,9	劉進

Total: 28 Page

Contents

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Type	480 * 3 (RGB) * 272 Dots
LCD Type	a-Si TFT , Normally white, Transmissive type
Screen size(inch)	4.3 inch
Viewing Direction	6 O'clock
Color configuration	RGB-Strip
Interface	Digital 24-bits RGB
Other(controller/driver IC)	OTA5180A (Or Compatible IC)
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer web site : http://www.powertip.com.tw/news.php?area_id_view=1085560481/

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	105.5(W) x 67.2 (L) x 5.0(H)MAX	mm

LCD panel

Item	Standard Value	Unit
Active Area	95.04 (W) x 53.856 (L)	mm

Touch panel

Item	Standard Value	Unit
Viewing Area	99.5 (W) * 58.0 (L)	mm
Active Area	97.0 (W) * 55.8 (L)	mm

Note : For detailed information please refer to LCM drawing

1.3　Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit
System Power Supply Voltage	VDDIO	GND=0	-0.3	4.5	V
Operating Temperature	T_{OP}	-	-20	70	°C
Storage Temperature	T_{ST}	-	-30	80	°C

1.4　DC Electrical Characteristics

Module　　　　　　　　　　　　　　　　　　　　　　　　　GND = 0V, Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage	VDDIO	-	3.0	3.3	3.6	V
Input H/L Level Voltage	VIH	-	0.7VDDIO	-	VDDIO	V
	VIL	-	0	-	0.3VDDIO	V
Output H/L Level Voltage	VOH	-	VDDIO-0.4	-	VDDIO	V
	VOL	-	0	-	GND+0.4	V
Supply Current	I_{DD}	VDDIO = 3.3 V	-	12	20	mA

1.5 Optical Characteristics

TFT LCD Module   VDDIO= 3.3 V, Ta=25°C

Item		Symbol	Condition	Min.	Typ.	Max.	unit	-
Response time	Tr+Tf	25℃	-	-	30	45	ms	Note2
Viewing angle	Top	θY+	CR ≥ 10	-	60	-	Deg.	Note4
	Bottom	θY-		-	60	-		
	Left	θX-		-	60	-		
	Right	θX+		-	60	-		
Contrast ratio		CR		500	600	-	-	Note 3
Color of CIE Coordinate（With B/L & TP）	White	X	IF= 20mA	0.24	0.29	0.34	-	Note1
		Y		0.28	0.33	0.38		
	Red	X		0.52	0.57	0.62		
		Y		0.28	0.33	0.38		
	Green	X		0.29	0.34	0.39		
		Y		0.53	0.58	0.63		
	Blue	X		0.10	0.15	0.20		
		Y		0.07	0.12	0.17		
Average Brightness Pattern=white display (With LCD & TP)*1		IV	IF= 20mA	200	310	-	cd/m2	Note1
Uniformity (With LCD & TP)*2		△B	IF= 20mA	70	-	-	%	Note1

Note 1:

*1：△B=B(min) / B(max) * 100%

*2：Measurement Condition for Optical Characteristics:

　　a：Environment: 25℃±5℃ / 60±20%R.H，no wind，dark room below 10 Lux at typical lamp current and typical operating frequency.

　　b：Measurement Distance: 500 ± 50 ㎜ ，(θ= 0°)

　　c：Equipment: TOPCON BM-7 fast，(field 1°)，after 10 minutes operation.

　　d：The uncertainty of the C.I.E coordinate measurement ±0.01，Average Brightness ± 4%

Colorimeter=BM-7 fast
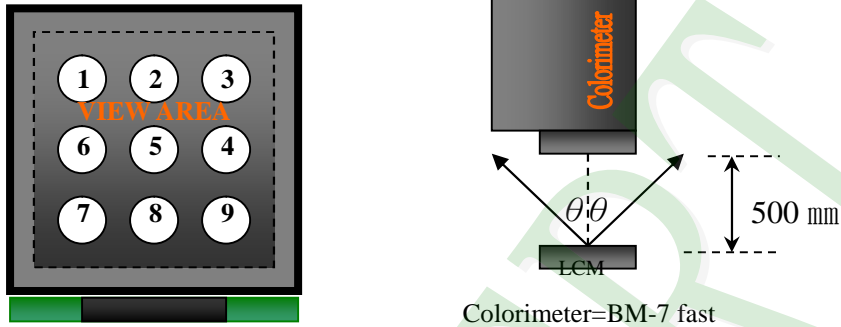
To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

Note2: Definition of response time:

The output signals of photo detector are measured when the input signals are changed from "black" to "white"(falling time) and from "white" to "black"(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:
Normally White

Normally Black

"Black" "White" "Black"

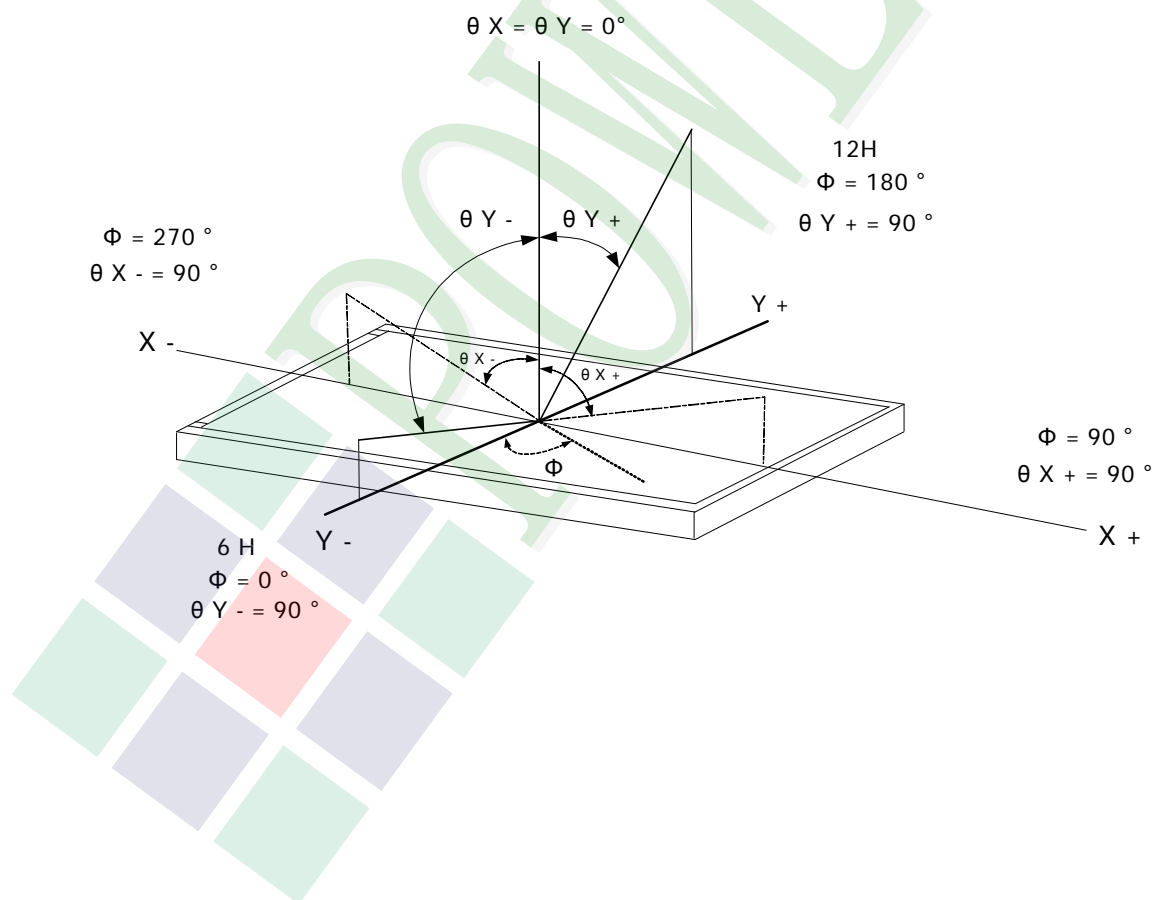100%
90%

Signal (Relative value)

10%
0%

Tr Tf
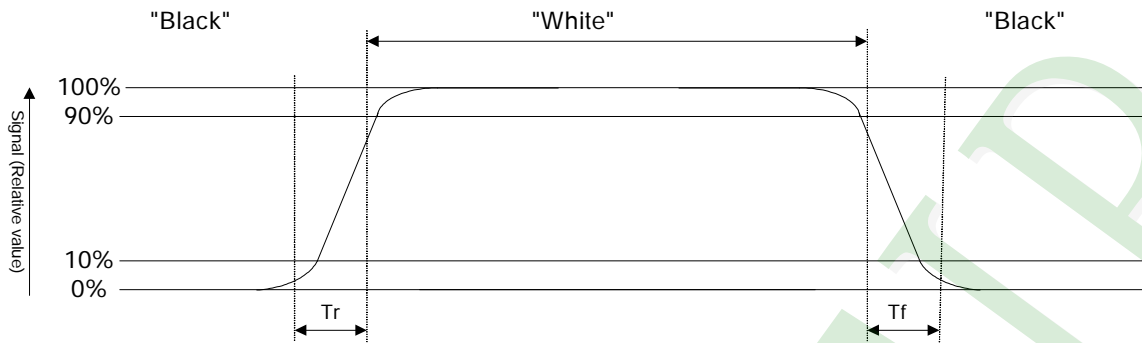
Note3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula

$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at "White" state}}{\text{Photo detector output when LCD is at "Black" state}}$$

Note4: Definition of viewing angle:

Refer to figure as below:

θ X = θ Y = 0°

12H
Φ = 180 °
θ Y + = 90 °

Φ = 270 °
θ X - = 90 °

θ Y - θ Y +

Y +

X -

θ X - θ X +

Φ = 90 °
θ X + = 90 °

Φ

X +

6 H
Φ = 0 °
θ Y - = 90 °

Y -

1.6 Backlight Characteristics

Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
LED Forward Current	IF	Ta =25℃	-	30	mA
LED Reverse Voltage	VR	Ta =25℃	-	7	V
Power Dissipation	PD	Ta =25℃	-	490	mW

Electrical / Optical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF		19.6	22.8	24.5	V
Average Brightness (Without LCD & T/P)	IV	IF= 20mA	5000	6000	-	cd/m^2
CIE Color Coordinate (Without LCD & T/P)	X		0.26	0.30	0.34	-
	Y		0.26	0.30	0.34	
Color	White					

Circuit diagram
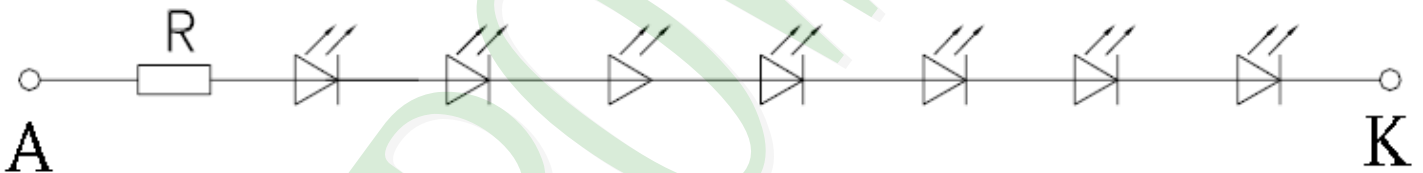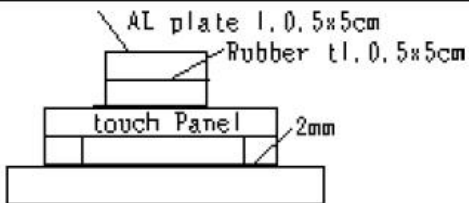
Other Description

Item	Conditions	Description
Life Time	Ta =25℃ IF= 20mA	20000 hrs

1.7 Touch Panel Characteristics

General Standard Specification

Item	Specification
Input Method	Finger of stylus pen
ITO Glass	T=0.7mm,400Ω/□ ±100Ω
ITO Film	T=0.188mm,400Ω/□ ±100Ω（anti-glare & Anti-Newton Ring Type）
Operating Temperature Range	-20℃~70℃,20~85%RH(Except for dew gathering)
Storage Temperature Range	-30℃~80℃, 10~90%RH (Except for dew gathering)
Surface Hardness	3H-prressure 500gf,45deg.
Hitting Durability	1,000,000times min.(Tip R 8 mm&R0.8mm)
Pen Sliding Durability	100,000 times min(Tip R0.8mm)
Insulation Impedance	DC25V 1min,20MΩ↑
Light Transparency	80%min
Linearity	±1.5%(±1.5%After environmental and life test)
Linearity Force	100gf less input with stylus pen (R0.8mm)
Activation Force	50gf(Typical 20gf)less individual point on with stylus pen 9R0.8mm
Bouncing	<10ms
Impact Resistance	No damage when ψ9mm steel ball is dropped on the surface from 30 cm height at 1 time.
Flexible pattern Heat Seal Peeling Strength	500gf/cm (peeling upward by 90deg)
Flexible pattern Bending Resistance	Bending 3 times by bending radius R1.0 mm The requirements in4-2shall be satisfied
Flexible Pattern Insert/Pull Out Resistance	5times at least .The requirements in 4-2shall be satisfied.
Vibration Resistance	Not in operation :The requirements in 3 to 4 shall be satisfied after sweep vibration of 2G15~55Hz(1min) is given for 30 min ,each in the directions of X,Y,Z.
Package Drop	No damage to the product.(1 corner edge,2ridges,4 surfaces ,drop from 50 cm height).
Static load resistance	After 4.5Kg load for 1 min is Applied to the center area (25cm²)of the Touch panel ,the requirements in 3 and 4,shall be satisfied.	

Optical&Electrical Characteristics

Test by light measure device and the result should be 80%min.

(A)   Insulation Resistance.

20 MΩ or more (DC 25V 1min)

(B)   Resistance Between Terminals.

Direction X (Film side): 260Ω~1240Ω

Direction Y (Glass side): 160Ω~ 640Ω

(C)   Linearity.

± 1.5% Measuring method, Linearity(%)= $\Delta V/(EV-SV)$ *100

± 1.5%(after environmental and life test)

ΔV: The difference between the ideal voltage and measured voltage on the each measuring line.

SV: Voltage of starting Points

EV: Voltage of Ending Points

(D)   Operating Voltage.

5V DC.

Max Voltage : 7V DC.

(E)   Bouncing

<10ms

Tip R 3.75mm, hardness 10°~20° ,silicon rubber ,500gf operation : 40 mm/sec.

2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram
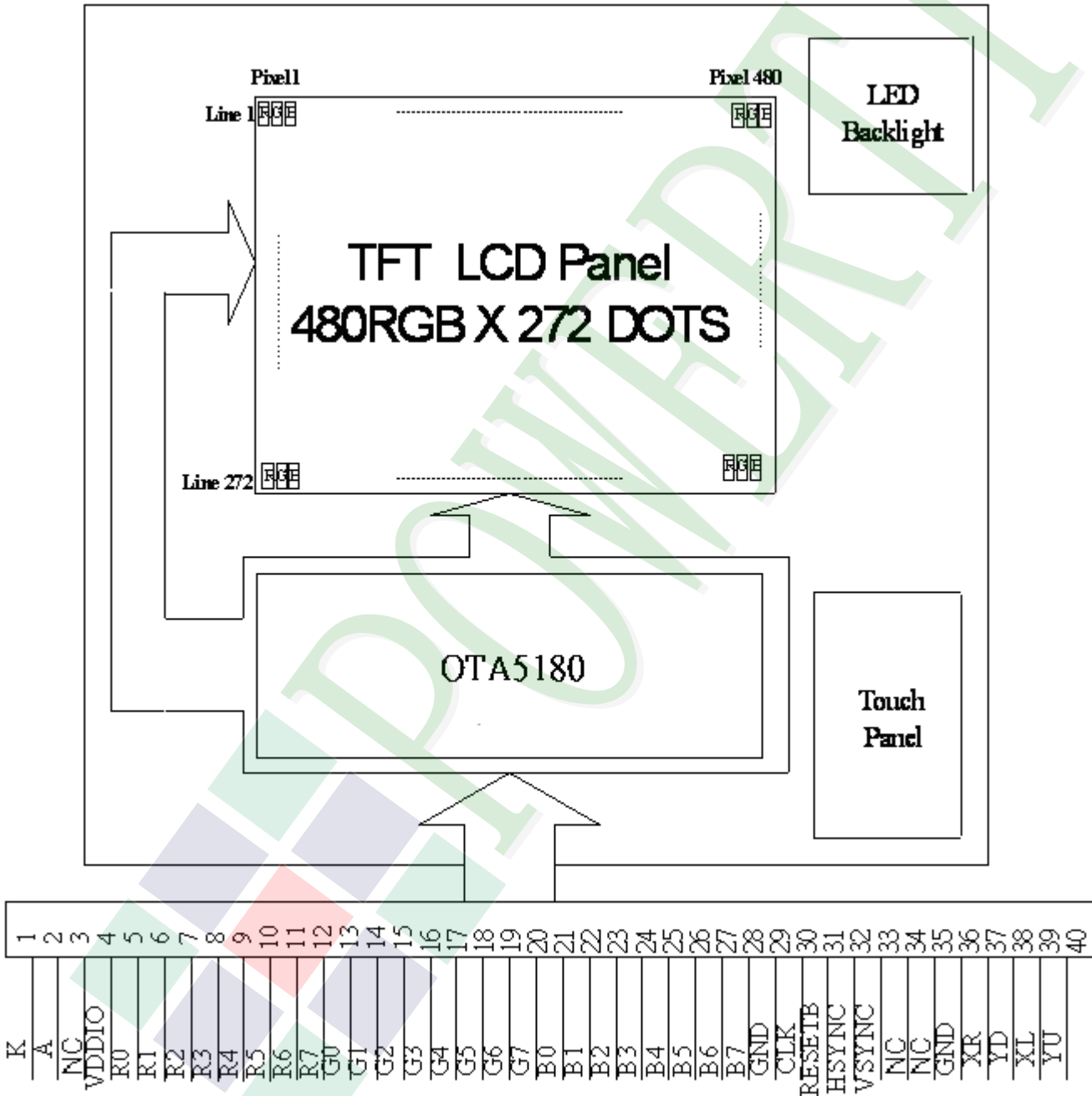
2.2 Interface Pin Description

Pin No.	Symbol	Function
1	K	Power supply for LED Backlight cathode input
2	A	Power supply for LED Backlight anode input
3	NC	No connection
4	VDDIO	Digital power
5	R0	Red data bit 0
6	R1	Red data bit 1
7	R2	Red data bit 2
8	R3	Red data bit 3
9	R4	Red data bit 4
10	R5	Red data bit 5
11	R6	Red data bit 6
12	R7	Red data bit 7
13	G0	Green data bit 0
14	G1	Green data bit 1
15	G2	Green data bit 2
16	G3	Green data bit 3
17	G4	Green data bit 4
18	G5	Green data bit 5
19	G6	Green data bit 6
20	G7	Green data bit 7

Pin No.	Symbol	Function
21	B0	Blue data bit 0
22	B1	Blue data bit 1
23	B2	Blue data bit 2
24	B3	Blue data bit 3
25	B4	Blue data bit 4
26	B5	Blue data bit 5
27	B6	Blue data bit 6
28	B7	Blue data bit 7
29	GND	Ground
30	CLK	Dot data clock
31	RESETB	Active low global reset signal input.
32	HSYNC	Horizontal sync input
33	VSYNC	Vertical sync input
34	NC	No connection
35	NC	No connection
36	GND	Ground
37	XR	Right side of touch panel.
38	YD	Bottom side of touch panel.
39	XL	Left side of touch panel.
40	YU	Up side of touch panel.

2.3 Timing Characteristics

2.3.1 AC Characteristics

VDDIO=3.3V, TA=-20~70℃

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLK pulse duty	Tcw	40	50	60	%	
Hsync width	Thw	1.0	-	-	DCLK	
Hsync period	Th	55	60	65	us	
Vsync setup time	Tvst	12	-	-	ns	
Vsync hold time	Tvhd	12	-	-	ns	
Hsync setup time	Thst	12	-	-	ns	
Hsync hold time	Thhd	12	-	-	ns	
Data set-up time	Tdsu	12	-	-	ns	
Data hold time	Tdhd	12	-	-	ns	
SD output stable time	Tst	-	10	12	us	
GD output rise and fall time	Tgst	-	500	1000	ns	

2.3.2 AC Timing Diagram

Clock and Data Input Timing Diagram
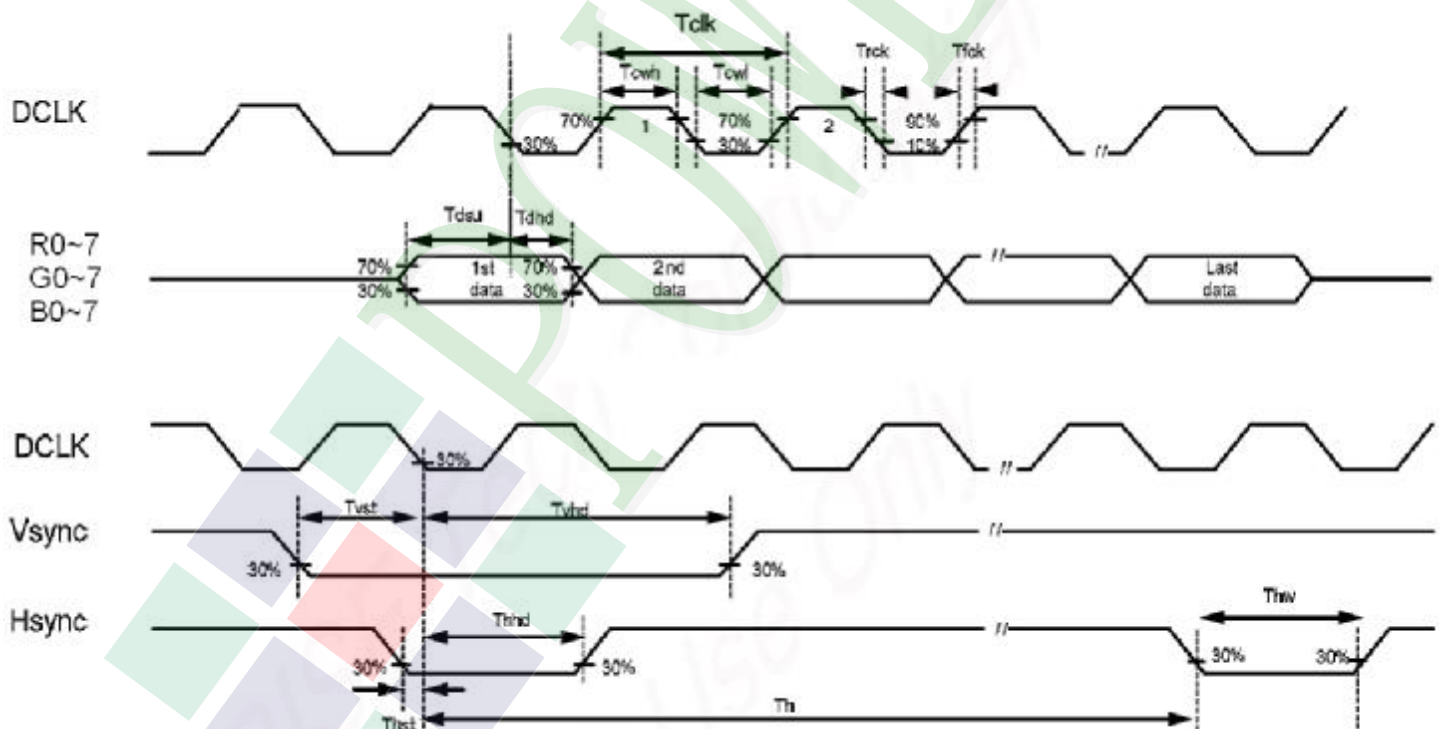
2.4 Data Format

2.4.1 Parallel RGB Input Timing Diagram
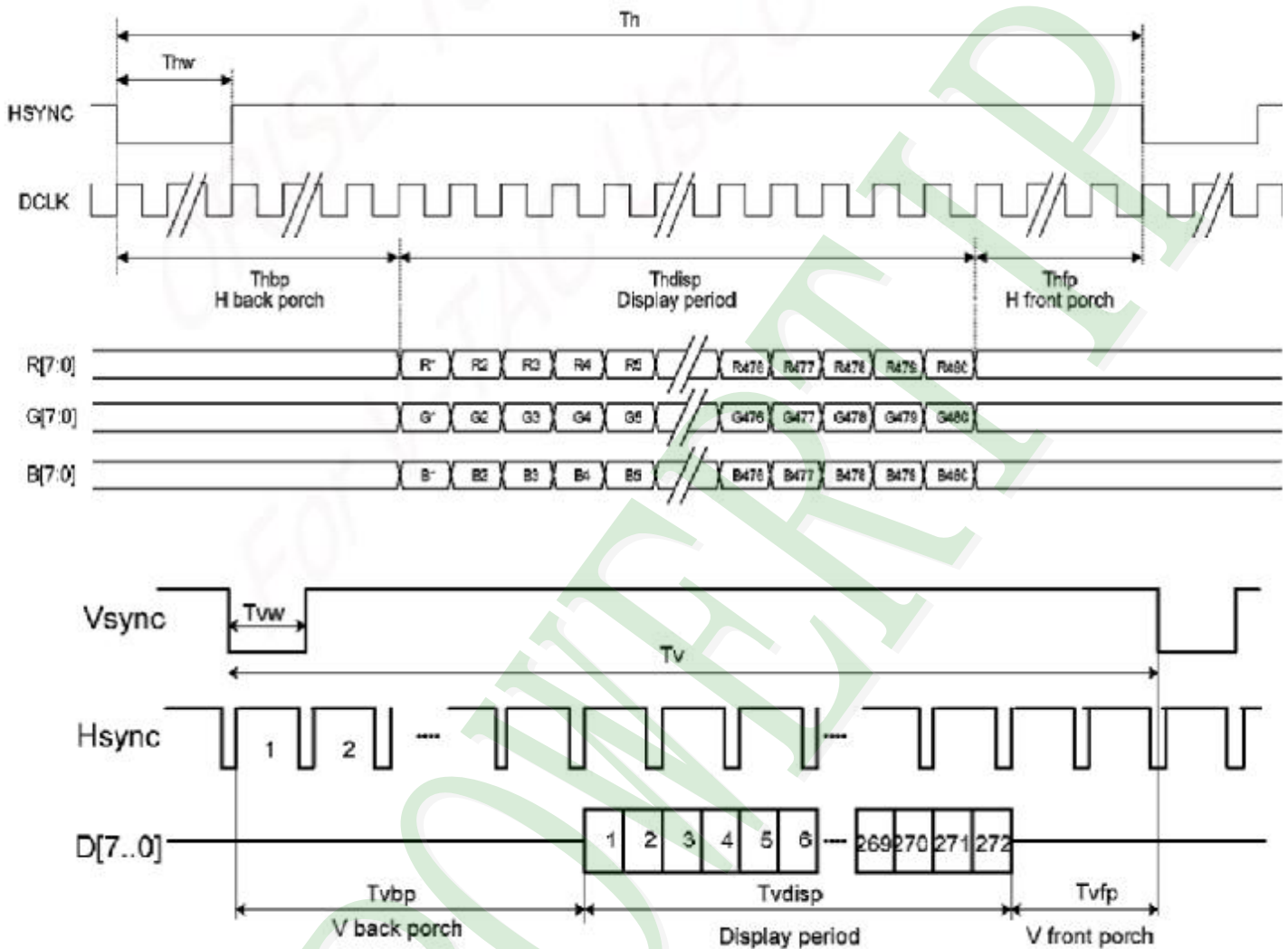
2.4.2 Parallel RGB Input Timing Table

Item		Symbol	Min.	Typ.	Max.	Unit	
CLK	Frequency	Fclk	5	9	12	MHz	
CLK	Period	Tclk	83	110	200	ns	
Hsync	Period Time	Th	490	531	605	DCLK	
	Display Period	Thdisp		480		DCLK	
	Back Porch	Thbp	8	43		DCLK	By H_BLANKING setting
	Front Porch	Thfp	2	8		DCLK	
	Pulse Width	Thw	1			DCLK	
Vsync	Period Time	Tv	275	288	335	H	
	Display Period	Tvdisp		272		H	
	Back Porch	Tvbp	2	12		H	By V_BLANKING setting
	Front Porch	Tvfp	1	4		H	
	Pulse Width	Tvw	1	10		H	

2.5 Power On/Off Sequence

2.5.1 Power On Sequence
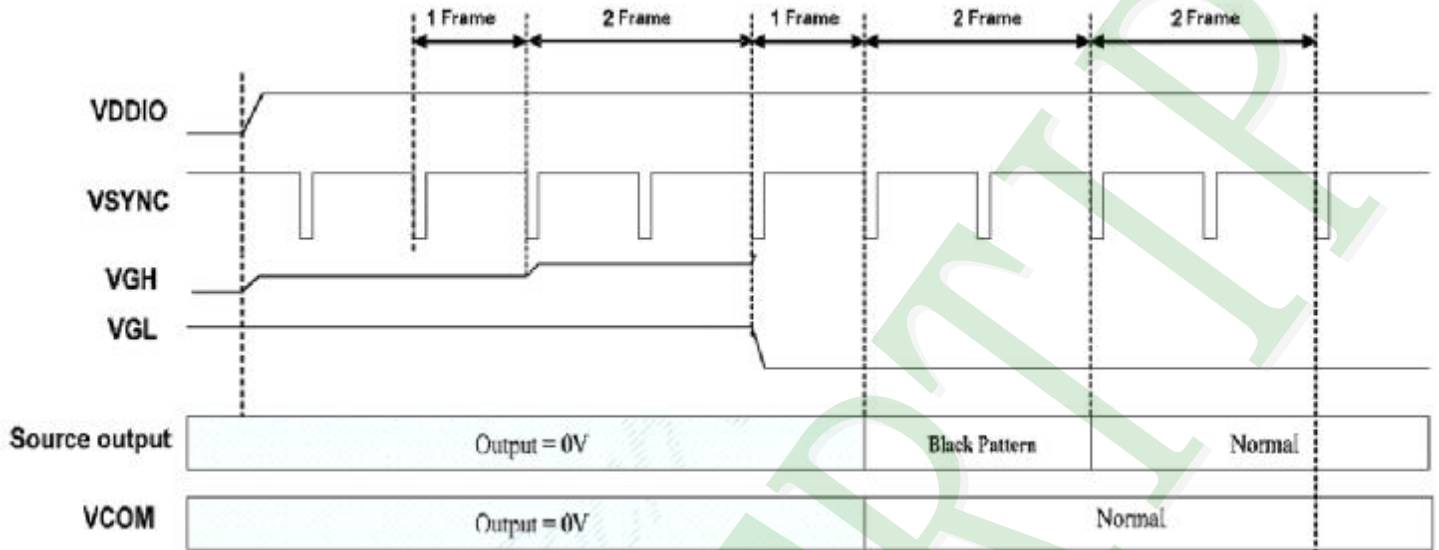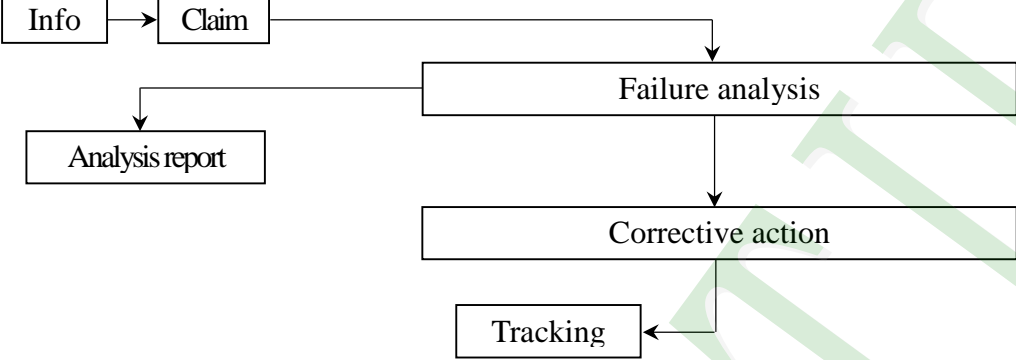
2.5.2 Power Off Sequence
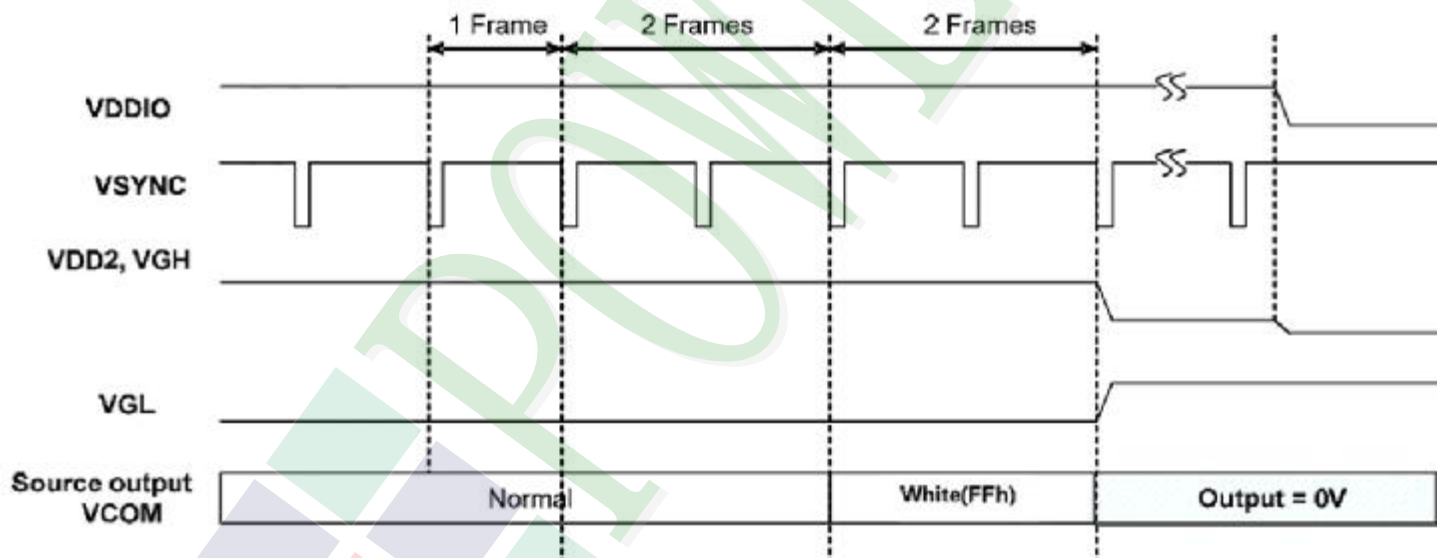
3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart

Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control

Marketing & Design:
- Info → Survey
- Request → Inquiry → Project evaluation
- Project Validation (NG → Inquiry, OK → Quote)
- Quote → Contract

Sample Approval:
- Contract → Design check
- Design check → Sample test
- Sample test → Verification (NG)
- Verification → OK → Sample approval
- Sample approval → OK (NG → Contract)

Pilot Run & Mass Product:
- Pilot run & Reliability test
- Verification (NG)
- OK → Specification preparation
- Mass production
- Inspection (OK / NG)

Ship Out:
- Shipment → Ship out

Item	Customer	Sales	R&D	Q.A	Manufact uring	Product control	Purchase	Inventory control
Sales Service								
Q.A Activity	1. ISO 9001 Maintenance Activities　　2. Process improvement proposal 3. Equipment calibration　　　　　　 4. Education And Training Activities 5. Standardization Management							

Sales Service flow:

Info → Claim → Failure analysis → Analysis report

Failure analysis → Corrective action → Tracking

3.2   Inspection Specification

◆Scope：The document shall be applied to TFT-LCD Module for 3.5″ ~10″ (Ver.B01).

◆Inspection Standard：MIL-STD-105E Table Normal Inspection Single Sampling Level Ⅱ.

◆Equipment：Gauge、MIL-STD、Powertip Tester、Sample

◆Defect Level：Major Defect   AQL：0.4 ； Minor Defect   AQL：1.5

◆OUT Going Defect Level：Sampling.

◆Standard of the product appearance test：

   a. Manner of appearance test：

   （1）. The test best be under 20W×2 fluorescent light，and distance of view must be at 30 cm.

   （2）. The test direction is base on about around 45° of vertical line.
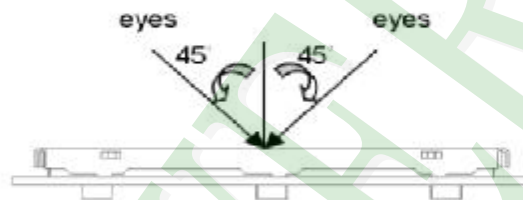
   （3）. Definition of area.
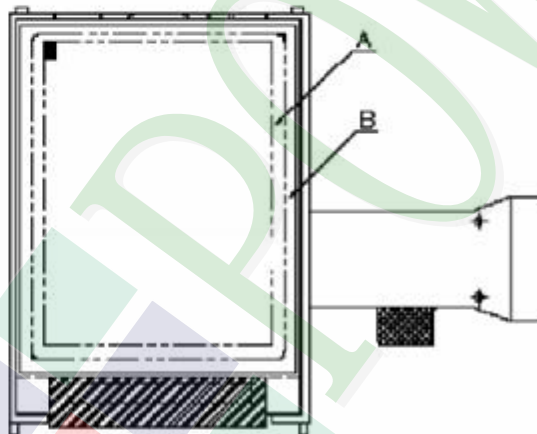
A area：viewing area

B area：Outside of viewing area

   （4）. Standard of inspection：   (Unit：mm)
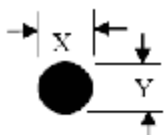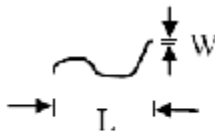
◆Specification For TFT-LCD Module 3.5″ ~10″ :　　　　　　　　　　　　　(Ver.B01)
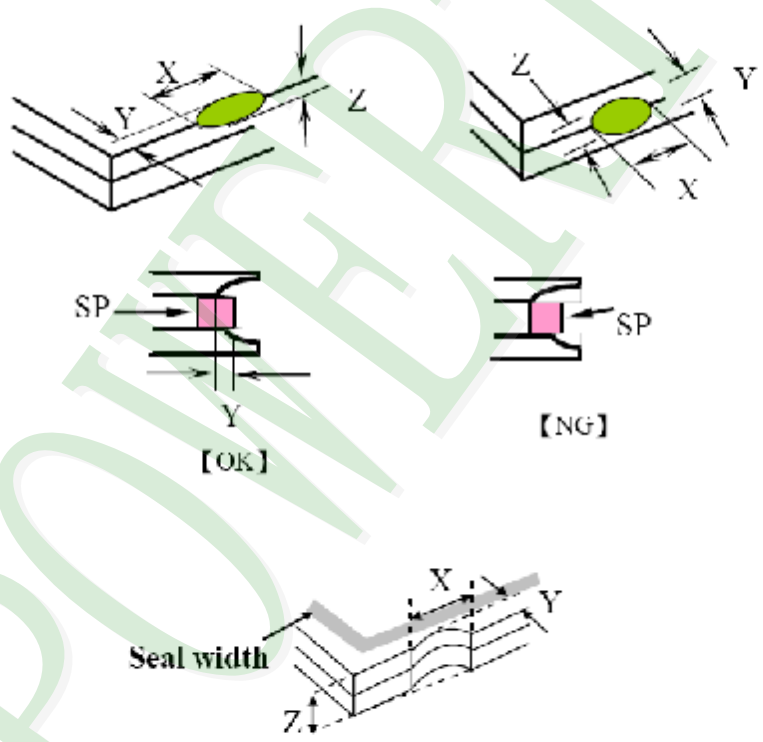
NO	Item	Criterion	Level
01	Product condition	1.1 The part number is inconsistent with work order of production.	Major
		1.2 Mixed product types.	Major
		1.3 Assembled in inverse direction.	Major
02	Quantity	2.1 The quantity is inconsistent with work order of production.	Major
03	Outline dimension	3.1 Product dimension and structure must conform to structure diagram.	Major
04	Electrical Testing	4.1 Missing line character and icon.	Major
		4.2 No function or no display.	Major
		4.3 Display malfunction.	Major
		4.4 LCD viewing angle defect.	Major
		4.5 Current consumption exceeds product specifications.	Major
05	Dot defect (Bright dot 、 Dark dot) On -display	<table><tr><td rowspan="4">Dot Defect</td><td>Item</td><td>Acceptance (Q'ty)</td></tr><tr><td>Bright Dot</td><td>≦ 4</td></tr><tr><td>Dark Dot</td><td>≦ 5</td></tr><tr><td>Joint Dot</td><td>≦ 3</td></tr><tr><td>Total</td><td>≦ 7</td></tr></table> 5.1 Inspection pattern : full white , full black , Red , Green and blue screens. 5.2 It is defined as dot defect if defect area >1/2 dot. 5.3 The distance between two dot defect ≥5 mm.	Minor
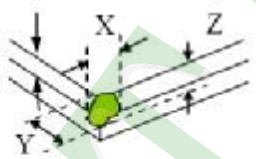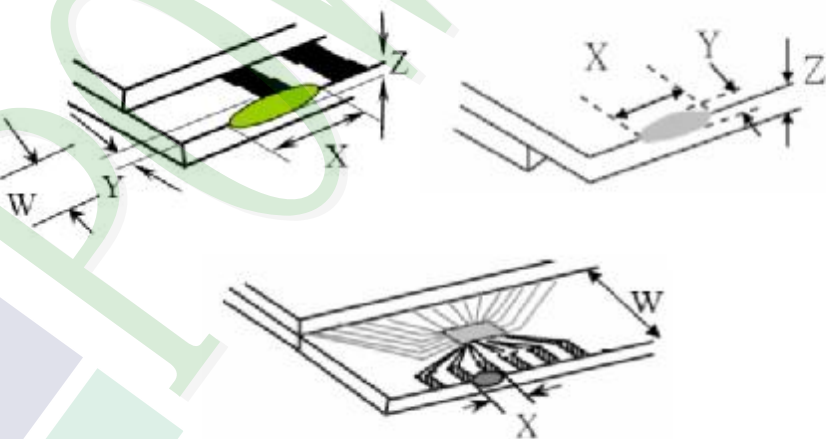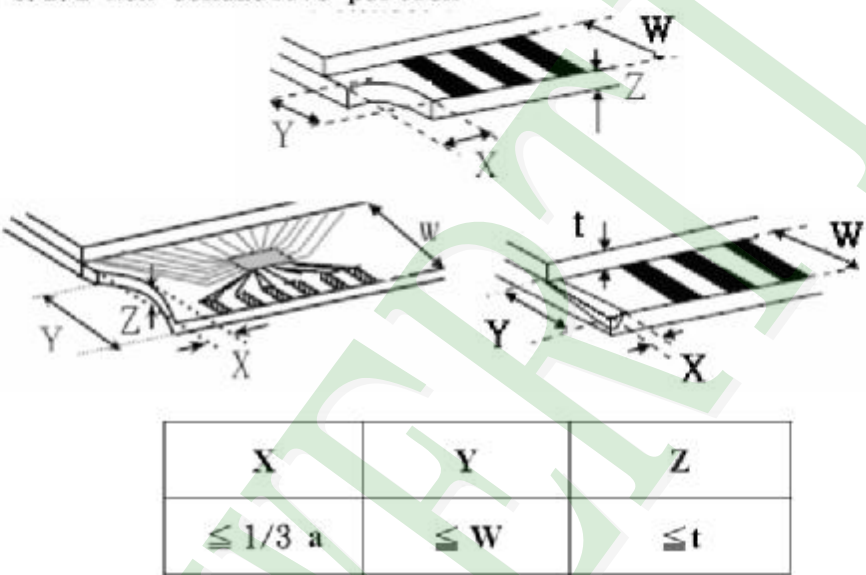
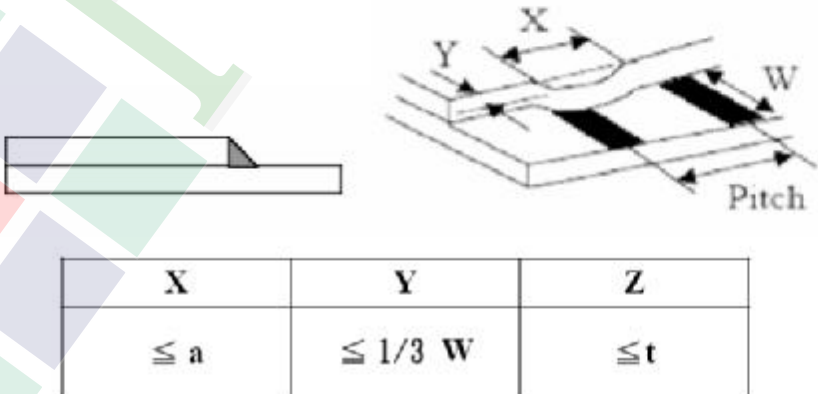| NO	Item	Criterion	Level
06	**Black or white dot、scratch、contamination** Round type $\Phi = (x+y)/2$ Line type	**6.1 Round type (Non-display or display) :** 6.2 Line type(Non-display or display) :	Minor
07	**Polarizer Bubble**		Minor

6.1 Round type (Non-display or display) :

Dimension (diameter：Φ)	Acceptance (Q'ty)	
	A area	B area
$\Phi \leqq 0.25$	Ignore	
$0.25 < \Phi \leqq 0.50$	5	Ignore
$\Phi > 0.50$	0	
Total	5	

6.2 Line type(Non-display or display) :

Length (L)	Width (W)	Acceptance (Q'ty)	
		A area	B area
---	$W \leqq 0.03$	Ignore	
$L \leqq 10.0$	$0.03 < W \leqq 0.05$	4	
$L \leqq 5.0$	$0.05 < W \leqq 0.10$	2	Ignore
---	$W > 0.10$	As round type	
	Total	5	

07 Polarizer Bubble

Dimension (diameter：Φ)	Acceptance (Q'ty)	
	A area	B area
$\Phi \leqq 0.25$	Ignore	
$0.25 < \Phi \leqq 0.50$	4	
$0.50 < \Phi \leqq 0.80$	1	Ignore
$\Phi > 0.80$	0	
Total	5	

NO	Item	Criterion	Level
08	The crack of glass	Symbols : X : The length of crack Y : The width of crack. Z : The thickness of crack W : terminal length t : The thickness of glass a : LCD side length 8.1 General glass chip : 8.1.1 Chip on panel surface and crack between panels:	Minor

X	Y	Z
≦ a	Crack can't enter viewing area	≦1/2 t
≦ a	Crack can't exceed the half of SP width.	1/2 t < Z ≦2 t

◆Specification For TFT-LCD Module 3.5″ ~10″ :   (Ver.B01)

NO	Item	Criterion	Level
08	The crack of glass	Symbols : X : The length of crack Y : The width of crack. Z : The thickness of crack W : terminal length t : The thickness of glass a : LCD side length 8.1.2 Corner crack : *(diagram)* <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≦1/5 a</td><td>Crack can't enter viewing area</td><td>Z ≦1/2 t</td></tr><tr><td>≦1/5 a</td><td>Crack can't exceed the half of SP width.</td><td>1/2 t < Z ≦ 2 t</td></tr></table> 8.2 Protrusion over terminal : 8.2.1 Chip on electrode pad : *(diagrams)* <table><tr><td></td><td>X</td><td>Y</td><td>Z</td></tr><tr><td>Front</td><td>≦ a</td><td>≦ 1/2 W</td><td>≦ t</td></tr><tr><td>Back</td><td>≦ a</td><td>≦ W</td><td>≦ 1/2 t</td></tr></table>	Minor

NO	Item	Criterion	Level
08	The crack of glass	Symbols : X : The length of crack Y : The width of crack. Z : The thickness of crack W : terminal length t : The thickness of glass a : LCD side length 8.2.2 Non-conductive portion : <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≤ 1/3 a</td><td>≤ W</td><td>≤ t</td></tr></table> ⊙ If the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications. 8.2.3 Glass remain : <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≤ a</td><td>≤ 1/3 W</td><td>≤ t</td></tr></table>	Minor

NO	Item	Criterion	Level
09	Backlight elements	9.1 Backlight can't work normally.	Major
		9.2 Backlight doesn't light or color is wrong.	Major
		9.3 Illumination source flickers when lit.	Major
10	General appearance	10.1 Pin type、quantity、dimension must match type in structure diagram.	Major
		10.2 No short circuits in components on PCB or FPC.	Major
		10.3 Parts on PCB or FPC must be the same as on the production characteristic chart .There should be no wrong parts , missing parts or excess parts.	Major
		10.4 Product packaging must the same as specified on packaging specification sheet.	Minor
		10.5 The folding and peeled off in polarizer are not acceptable.	Minor
		10.6 The PCB or FPC between B/L assembled distance(PCB or FPC) is ≦1.5 mm.	Minor

4. RELIABILITY TEST

4.1 Reliability Test Condition   (Ver.B01)

NO.	TEST ITEM	TEST CONDITION
1	High Temperature Storage Test	Keep in +80 ±2℃ 96 hrs Surrounding temperature, then storage at normal condition 4hrs.
2	Low Temperature Storage Test	Keep in -30 ±2℃ 96 hrs Surrounding temperature, then storage at normal condition 4hrs.
3	High Temperature / High Humidity Storage Test	Keep in +60 ℃ / 90% R.H duration for 96 hrs Surrounding temperature, then storage at normal condition 4hrs. (Excluding the polarizer)
4	Temperature Cycling Storage Test	**-30℃ → +25℃ → +80℃ → +25℃** **(30mins) (5mins) (30mins) (5mins)** ← 10 Cycle → Surrounding temperature, then storage at normal condition 4hrs.
5	ESD Test	**Air Discharge:** **Apply 2 KV with 5 times** Discharge for each polarity +/- ┃ **Contact Discharge:** **Apply 250 V with 5 times** discharge for each polarity +/- 1. Temperature ambiance : 15℃～35℃ 2. Humidity relative : 30%～60% 3. Energy Storage Capacitance(Cs+Cd) : 150pF±10% 4. Discharge Resistance(Rd) : 330Ω±10% 5. Discharge, mode of operation : Single Discharge (time between successive discharges at least 1 sec) (Tolerance if the output voltage indication : ±5%)
6	Vibration Test (Packaged)	1. Sine wave 10～55 Hz frequency (1 min/sweep) 2. The amplitude of vibration :1.5 mm 3. Each direction (X、Y、Z) duration for 2 Hrs
7	Drop Test (Packaged)	<table><tr><th>Packing Weight (Kg)</th><th>Drop Height (cm)</th></tr><tr><td>0 ~ 45.4</td><td>122</td></tr><tr><td>45.4 ~ 90.8</td><td>76</td></tr><tr><td>90.8 ~ 454</td><td>61</td></tr><tr><td>Over 454</td><td>46</td></tr></table> Drop Direction :※1 corner / 3 edges / 6 sides each 1time

5. PRECAUTION RELATING PRODUCT HANDLING

5.1 SAFETY

5.1.1　　If the LCD panel breaks , be careful not to get the liquid crystal to touch your skin.

5.1.2　　If the liquid crystal touches your skin or clothes , please wash it off immediately by using soap and water.

5.2 HANDLING

5.2.1　　Avoid any strong mechanical shock which can break the glass.

5.2.2　　Avoid static electricity which can damage the CMOS LSI—When working with the module , be sure to ground your body and any electrical equipment you may be using.

5.2.3　　Do not remove the panel or frame from the module.

5.2.4　　The polarizing plate of the display is very fragile. So , please handle it very carefully ,do not touch , push or rub the exposed polarizing with anything harder than an HB pencil lead (glass , tweezers , etc.)

5.2.5　　Do not wipe the polarizing plate with a dry cloth , as it may easily scratch the surface of plate.

5.2.6　　Do not touch the display area with bare hands , this will stain the display area.

5.2.7　　Do not use ketonics solvent & aromatic solvent. Use with a soft cloth soaked with a cleaning naphtha solvent.

5.2.8　　To control temperature and time of soldering is 320±10℃ and 3-5 sec.

5.2.9　　To avoid liquid (include organic solvent) stained on LCM .

5.3 STORAGE

5.3.1　　Store the panel or module in a dark place where the temperature is 25℃ ±5℃ and the humidity is below 65% RH.

5.3.2　　Do not place the module near organics solvents or corrosive gases.

5.3.3　　Do not crush , shake , or jolt the module.

5.4 TERMS OF WARRANTY

5.4.1　　Applicable warrant period

The period is within thirteen months since the date of shipping out under normal using and storage conditions.

5.4.2　　Unaccepted responsibility

This product has been manufactured to your company's specification as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment , we cannot take responsibility if the product is used in nuclear power control equipment , aerospace equipment , fire and security systems or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required.
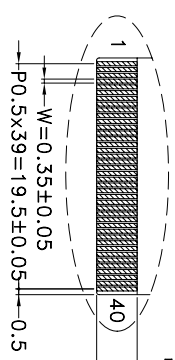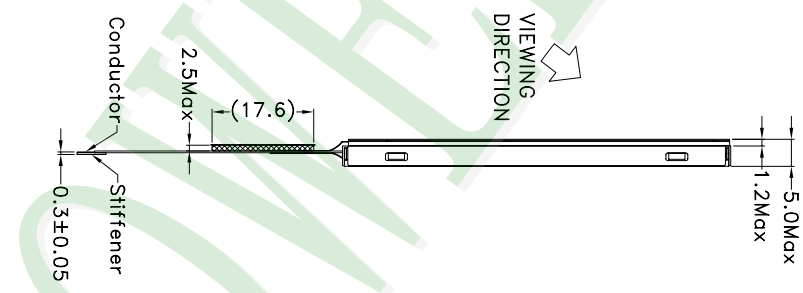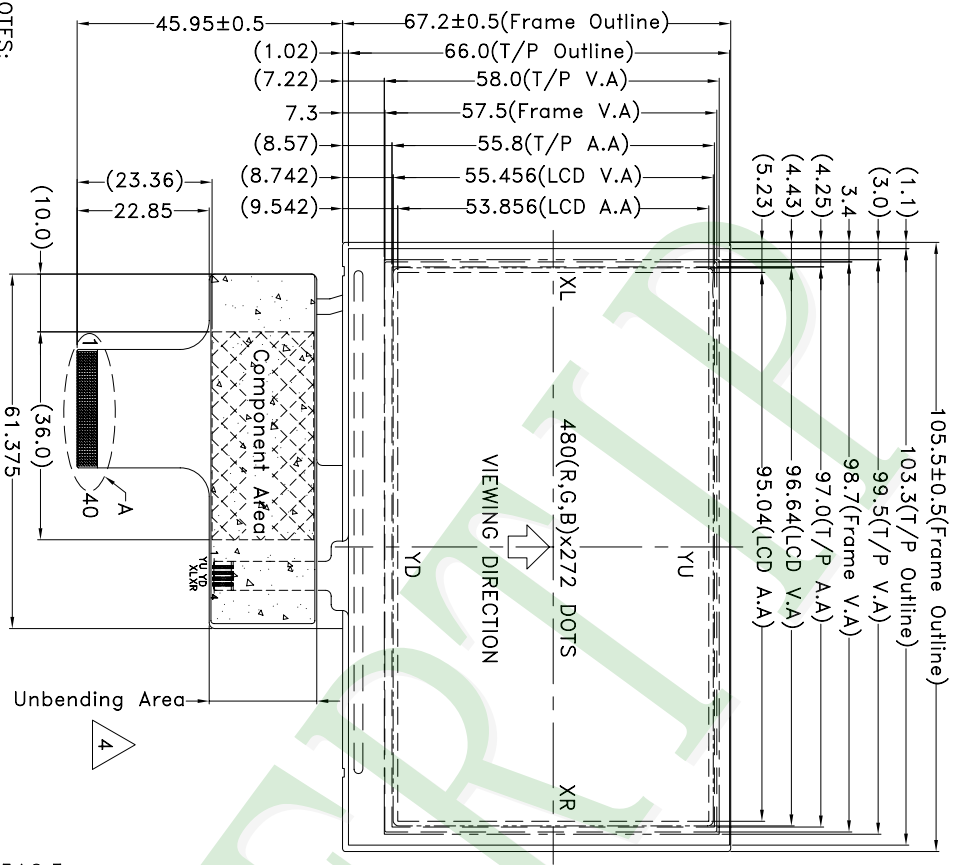
NOTES:
1. LCD TYPE: α-Si TFT
2. LCD DISPLAY: POSITIVE/TRANSMISSIVE
3. VIEW DIRECTION: 6 O'CLOCK
4. Top: -20~70°C Tst:-30~80°C
5. The tolerance unless classified ±0.2mm
6. IC NO.: OTA5180A
7. IC NO.: OTA5180A
   ▨ Shield tape
8. FPC suggested connector :
   (ENTERY)6701K-E40N-00L or compatible △4
   ▨ FPC Component Area(H=1.0Max)

Detail A
Scale: 2/1

W=0.35±0.05
P0.5×39=19.5±0.05
0.5
3.5±0.3

Unbending Area △4

PIXEL Detail
SCALE:80/1

0.198
0.066
0.198
R G B

2.5Max
(17.6)
1.2Max
5.0Max
0.3±0.05
Conductor
Stiffener

VIEWING DIRECTION

6-R1.0
2-R5.0
20.5±0.07
13.05
(18.55)
5.0±0.5
41.47

(23.36)
22.85
(10.0)
(36.0)
61.375
40

45.95±0.5

105.5±0.5(Frame Outline)
103.3(T/P Outline)
99.5(T/P Outline)
98.7(Frame V.A)
97.0(T/P A.A)
96.64(LCD V.A)
95.04(LCD A.A)

67.2±0.5(Frame Outline)
66.0(T/P Outline)
58.0(T/P V.A)
57.5(Frame V.A)
55.8(T/P A.A)
55.456(LCD V.A)
53.856(LCD A.A)

(1.02)
(7.22)
7.3
(8.57)
(8.742)
(9.542)

(1.1)
(3.0)
3.4
(4.25)
(4.43)
(5.23)

480(R,G,B)×272 DOTS

VIEWING DIRECTION

XL
YU
YD
XR

Component Area

007					
006					
005					
004	Add Note	Terry	Eddy	2014/04/09	
003	Modification Component Area	Eddy	Eddy	2010/06/11	
002	Modification FPC Outline	Eddy	Eddy	2010/03/24	
001	NEW DRAWING	Eddy		2010/03/22	
REV		REV BY	REVISER	DATE	

PART NO.: PH480272T-006-I-Q

DRAWING NAME: JLMD-PH480272T-006-I-Q

TITLE: LCD Module Drawing

POWERTIP TECHNOLOGY CORPORATION
久正光電股份有限公司

Design	Terry	Unit	MM
Check	Eddy	Scale	1:1
Approve	Ryan	Page	1/1

| | Surface | Material | Thickness | Quantity |
| | | | | |

Length(Min) (mm)	1 ~ 4	4 ~ 16	16 ~ 63	63 ~ 250	250 ~ 1000
Tolerance (mm)					
Precision Level	-	-	-	-	-

PT-A-054-01

1.包裝材料規格表 (Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM)	PH480272T-006-I-Q	105.5 X 67.2	0.069	144	9.936
2	多層薄膜(1)POF	OTFILM0BA03ABA	19"X350X0.015	——	6	——
3	TRAY 盤 (2)Tray	TYPH48027201BA	352 X 260 X 12.8	0.1	42	4.2
4	內盒(3)Product Box	BX36627063ABBA	393 X 274 X 68	0.2692	6	1.6152
5	保利龍板(4)Polylon board	OTPLB00PL08ABA	550 X 393 X 20	0.0284	2	0.0568
6	外紙箱(5)Carton	BX57041027CCBA	570 X 410 X 265	1.4208	1	1.4208
7						
8						
9						

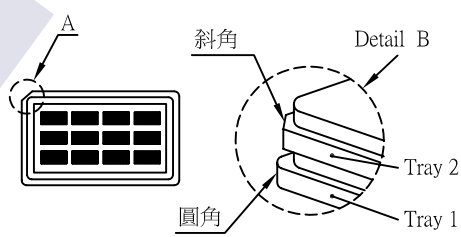2.一 整箱總重量 (Total LCD Weight in carton) :　17.23　Kg±10%

3.單箱數量規格表 (Packaging Specifications and Quantity) :

(1)LCM quantity per box : no per tray　　　4　　x no of tray　　6　　=　　24

(2)Total LCM quantity in carton : quantity per box　24　x no of boxes　6　=　144

Use empty tray
空 盤

+

Put products into the tray

⇓

Tray stacking

A

B

(1)多層薄膜 POF

(2)TRAY 盤 Tray

(3)內盒 Product Box

(4)保利龍板 Polylon board

(5)外紙箱 Carton

POWERTIP
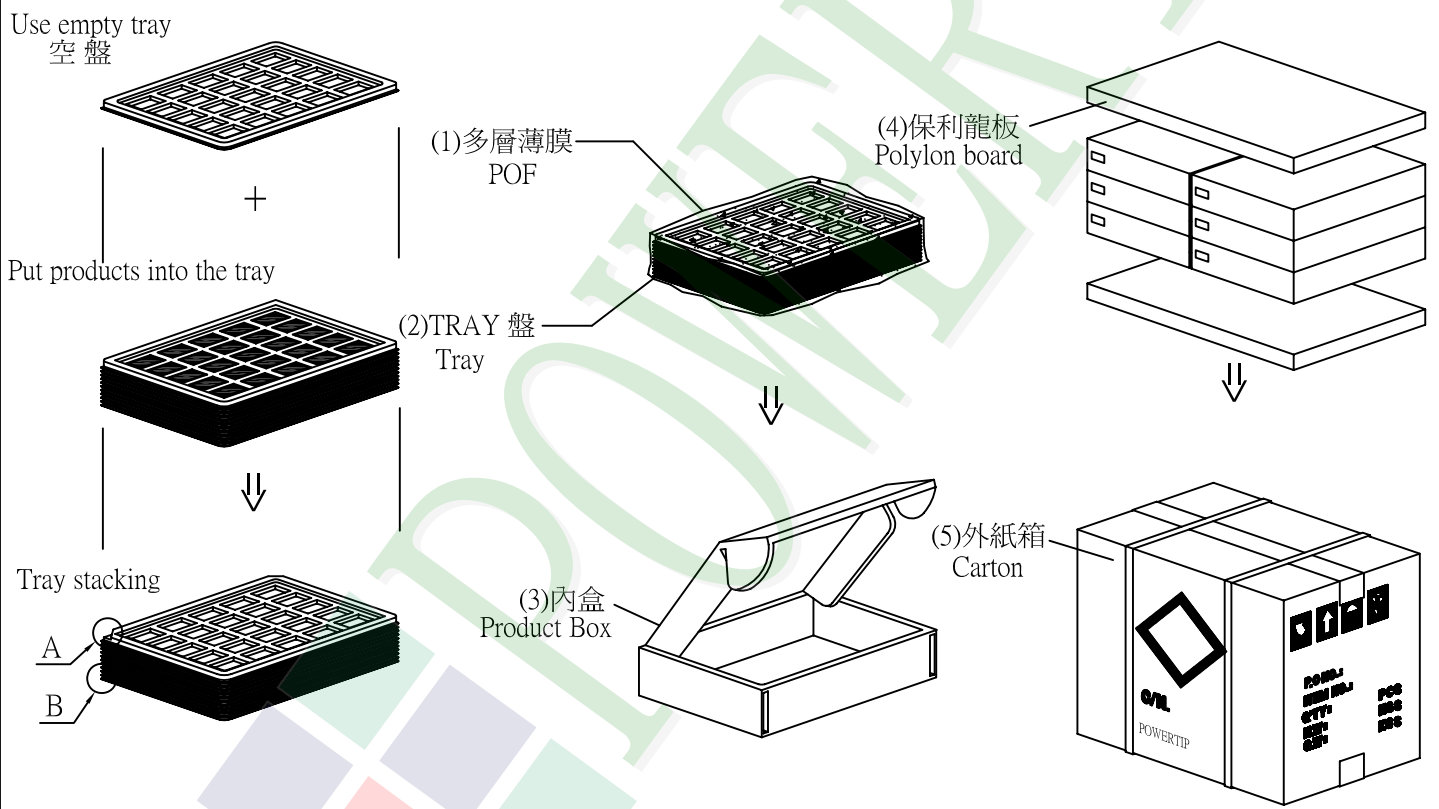
特 記 事 項 (REMARK)

1. Label Specifications :
標籤依廠內標準作業

A

斜角

Detail B

圓角

Tray 2

Tray 1

2.TRAY盤相疊時,需旋轉180度,請詳見B視圖
Rotate tray 180 degrees and place on top of stack.
Check the tray stack using Fig. B.

3.可適用於單品包裝
It's also suitable to Panel

4.Tray料號:
Tray Number:PH480272T-001